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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,213	09/30/2003	Alexander A. Maltsev	884.781US1	9941

21186 7590 01/17/2007

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER	
TRAN, KHAI	
ART UNIT	**PAPER NUMBER**
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/675,213	MALTSEV ET AL.	
	Examiner	Art Unit	
	KHAI TRAN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *25-27* is/are allowed.

6)☒ Claim(s) *1,2,9-13,15-18,20-23 and 28-30* is/are rejected.

7)☒ Claim(s) *3-8,14,19 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/22/04; 6/17/04*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 25 is objected to because of the following informalities: Appropriate correction is required.

Regarding 25, line 3, insert --;-- after the term "packet".

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 9, 10-13, 15-18, 20-21, 22, 23, 28-30 are rejected under 35 U.S.C. 102(e) as being anticipated by You et al (U.S. Pat. 7,039,000) (hereinafter as you).

Regarding claim 1, You discloses an apparatus as shown in Figure 3, comprising: a coarse timing synchronization element (400) to generate a coarse timing signal (409) from at least one of a plurality of first training symbols, the coarse timing signal indicating detection of a packet; and a fine timing synchronization element (500, 330) responsive to the coarse timing signal to generate a fine timing signal from at least one of a plurality of second training symbols, the fine timing signal to initiate data symbol processing (see col. 5, lines 2-39).

Regarding claim 2, You disclose wherein the coarse timing signal indicates detection of an orthogonal frequency division multiplexed (OFDM) packet, and the fine timing signal initiates channel estimation, and wherein the apparatus is a receiver to receive the OFDM packet (col. 5, lines 13-21; and col. 4, lines 62-65).

Regarding claim 9, You discloses wherein the fine timing signal indicates approximately a beginning of data symbols of the OFDM packet, and wherein the receiver further comprises a Fast Fourier Transform (FFT) element to perform an FFT on the data symbols in response to receipt of the fine timing signal, and wherein the FFT element has an FFT duration over which the FFT is performed, and wherein the first training symbols are approximately a quarter of the FFT duration, and the second training symbols are approximately equal to the FFT duration (col. 1, lines 43-50).

Regarding claims 10-11, You discloses wherein the fine timing signal indicates approximately an end of the second training symbols, and wherein the receiver further comprises a Fast Fourier Transform (FFT) element to perform an FFT on the second training symbols to estimate a channel transfer function in response to receipt of the fine timing signal; and wherein the FFT element has an FFT duration over which the FFT is performed, and wherein the first training symbols are approximately a quarter of the FFT duration, and the second training symbols are approximately equal to the FFT duration (col. 1, lines 43-50).

Regarding claim 12, You also discloses the timing synchronization further comprising an RF receive unit to generate a plurality of OFDM symbols from a received OFDM signal, the OFDM symbols comprising the plurality of first training symbols

followed by the plurality of second training symbols and data symbols (see Abstract, long and short training symbols).

Regarding claim 13, You discloses the timing synchronization further comprising an autocorrelating element to preliminary detect the OFDM packet by correlating at least one of the first training symbols with a next of the first training symbols and generate an initial packet detection signal (col. 5, line 41 to col. 6, line 56).

Regarding claim 15, You discloses wherein the first training symbols are short training symbols, and the second training symbols are long training symbols having a duration of approximately four times that of the short training symbols, the long training symbols having a duration of approximately 4 microseconds (see Figure 2).

Claim 16 is similar to claims 1-2. Therefore, claim 16 is rejected under a similar rationale.

Regarding claim 17, You discloses wherein the short training symbols are comprised of a known short training signal, and wherein the method further comprises: sampling, in response to an initial packet detection signal, at least one of the short training symbols over short sampling intervals; and correlating the sampled short training symbols with short matched filter coefficients, the short matched filter coefficients being complex conjugates of the known short training signal (see Figures 4 and 5; col. 6, lines 16-56).

Regarding claim 18, You discloses wherein sampling further comprises sampling the at least one of the short training symbols with a short training symbol matched filter during a short training symbol window beginning after several of the short training

symbols following receipt of the initial packet detection signal, the short training symbol window being approximately a duration of one of the short training symbols; and combining correlation outputs from the short training symbol matched filter for at least some of the short training symbols; and generating the coarse timing signal when a correlation output exceeds a predetermined coarse timing threshold (col. 6, lines 16-56).

Claims 20-21 are similar to claims 9-11. Therefore, claims 20-21 are rejected under a similar rationale.

Regarding claim 22, You discloses a method comprising: auto-correlating a received signal to initially detect a packet, the packet preceded by a preamble comprised of a plurality of first training symbols and a plurality of second training symbols (see Figures 3-5, a correlator 430, an OFDM signal detector coarse timing synchronization 400); performing a timing synchronization using at least one of the first training symbols and at least one of the second training symbols; and initiating data symbol processing and channel estimation in response to the timing synchronization (col. 5, lines 13-38).

Claim 23 is similar to claim 1. Therefore, claim 23 is rejected under a similar rationale.

Claims 28-30 are similar to claims 16-18. Therefore, claims 28-30 are rejected under a similar rationale.

Allowable Subject Matter

4. Claims 25-27 are allowed.

5. Claims 3-8, 14, 19, 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: You fails to disclose the apparatus comprising: wherein the coarse timing synchronization element includes a first training symbol matched filter substantially matched to the first training symbols, the first training symbol matched filter responsive to an initial packet detection signal, and wherein the first training symbols are comprised of a known first training signal, and wherein the first training symbol matched filter samples the at least one of the first training symbols over first sampling intervals and correlates the sampled first training symbols with first matched filter coefficients, the first matched filter coefficients being complex conjugates of the known first training signal; a dipole antenna to receive signals that include an OFDM packet a first symbol matched filter to coarsely detect a symbol boundary of the OFDM packet by correlating short training symbols; a second symbol matched filter to finely detect the symbol boundary by correlating long training symbols; and a data symbol-processing element to perform a channel estimation and to perform data symbol processing on the OFDM packet in response to fine packet detection by the second symbol matched filter.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mizoguchi et al (U.S. Pat. 6,658,063) disclose OFDM packet communication receiver system.

Zhu et al (US 2004/0005018 A1) disclose receiver and method for WLAN burst type signals.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAY PATEL can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KHAI TRAN
Primary Examiner
Art Unit 2611